TEACHERS' RETIREMENT BOARD

INVESTMENT COMMITTEE

SUBJECT: Internal Management of a Passive MSCI EAFE Portfolio

ITEM NUMBER: 10

ATTACHMENT(S): 1

ACTION: ___

DATE OF MEETING: May 3, 2000

INFORMATION: X

PRESENTER(S): Steven Tong

EXECUTIVE SUMMARY

One of the 1999/2000 objectives approved for the Investment Branch was to deliver a presentation regarding internal management of a Morgan Stanley Capital International Europe, Australia, Far East (MSCI EAFE) indexed portfolio. Attachment 1 contains a report that reviews and discusses the key issues associated with CalSTRS' interest in bringing a portion of the MSCI EAFE indexed portfolio under internal management. There are tradeoffs in undertaking an internal approach to managing a MSCI EAFE indexed portfolio. This report reviews the possible tradeoffs involved in making a decision about internal management.

There are several benefits for managing a MSCI EAFE indexed portfolio internally. They are as follows:

1. Potential to reduce overall tracking error within the MSCI EAFE passive component
2. Cost savings if sufficient asset size is internalized
3. Gain in knowledge base
4. Build up of infrastructure for additional index fund management
5. More control over liquidations and asset allocations

In November 1999, the Investment Committee authorized staff to issue a Request for Proposal (RFP) for passive domestic and non-domestic equity management. The RFP was released in March 2000 with final selections anticipated for July 2000.

Conclusions

The Request for Proposal for domestic, international, and emerging market passive managers is an important development for the passive MSCI EAFE portfolio. The results of the RFP process will provide a gauge to help the staff and Investment Committee when assessing the potential value of internal management of a portion of the MSCI EAFE portfolio. There is no action recommended at this time, however, staff will recommend that a detailed review and analysis be included in the 2000/01 Investment Branch objectives.

Background

This report is intended to highlight and discuss the issues facing CalSTRS as it considers moving a portion of its passively managed MSCI EAFE mandate from the current external manager to an internal program. The report also addresses the cost structure resulting from an internal program. Additionally, this report will visit the issue of how an internal program effectively enhances the total non-domestic equity management program at CalSTRS. This should help bring improved risk-adjusted investment returns for the overall non-domestic equity portfolio.

As of February 29, 2000, the CalSTRS investment portfolio had a total value of $109.1 billion. According to policy, which was approved in September, 1999, asset allocation guidelines assign 63% of the total assets to public equities, with 38% allocated to domestic equities and 25% allocated to non-domestic equities.

As of February 29, 2000, the CalSTRS' passive non-domestic equity portfolio totaled approximately $17.0 billion. CalSTRS retains Barclays Global Investors (BGI), for the management of a $15.1 billion MSCI EAFE portfolio. An additional $2.0 billion is allocated to a MSCI EMF portfolio. State Street Global Advisors passively manages this portfolio.

Non-Domestic Equity Structural Considerations

The Investment Committee is responsible for establishing an asset allocation policy for the entire CalSTRS' investment portfolio. The Investment Committee typically reviews and makes revision to this policy every two years. In addition, the Investment Committee establishes and refines performance benchmarks used to monitor the performance and risk characteristics of the overall portfolio in light of adopted policy.

The first non-domestic equity investment was incorporated into CalSTRS' portfolio in 1992. As previously mentioned, the Investment Committee last adopted an asset allocation policy in September 1999. Within this policy, the Investment Committee established a target proportion for non-domestic equities of 25% of total investment portfolio.

Given the significant allocation to non-domestic equity, selecting the appropriate asset class benchmark becomes especially important. This benchmark should represent a broad sample of the non-domestic equity market as much as possible while, at the same time, allow institutional investors such as CalSTRS the ability to create portfolios that track the characteristics of the benchmark.

In November 1998, the Investment Committee adopted the MSCI ACWI (All Country World Index) Free ex USA as its non-domestic equity benchmark. This benchmark consists of all developed and emerging markets in the MSCI universe excluding the United States and reflects CalSTRS' non-domestic equity structure.

The MSCI ACWI Free ex USA is broken out into two segments: i) developed markets and ii) emerging markets. From a benchmark construction viewpoint, the MSCI ACWI Free ex USA can be broken down into three asset benchmarks:

MSCI ACWI Free ex USA	=	MSCI Europe and Pacific Basin	+	MSCI Emerging Markets	+	Canada
100%	=	87%	+	9%	+	4%

In May 1998, the Investment Committee adopted a portfolio structure placing 50% of the non-domestic equity assets in "active" mandates and 50% in "passive" mandates. Active mandates are those investment assignments that, in aggregate, the Investment Committee expects to outperform the asset class benchmark (MSCI All Country World Index Free ex USA) over the investment cycle. Passive assignments are those assignments that, in aggregate, should match the investment performance of the MSCI All Country World Index Free Index ex USA.

The MSCI EAFE Index is a composite of two regional indices covering Europe and the Pacific. Approximately 87% of the MSCI world equity market capitalization ex USA is accounted for by the companies included in the MSCI EAFE Index.

The MSCI EAFE Index is a capitalization-weighted index that currently includes equities of companies located in 15 European countries (Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the United Kingdom), Australia, New Zealand, Hong Kong, Japan, and Singapore. The MSCI EAFE Index broadly represents the performance of foreign stock markets. Table 1 shows the weighting and number of issues by region and country.

Table 1: MSCI EAFE as of December 31, 1999

Country	Capitalization In Millions of USD	Weight (%)	Number Of Issues
Europe Region			
Austria	22.2080	0.22	18
Belgium	90.9790	0.90	14
Denmark	79.1976	0.78	21
Finland	301.7392	2.98	23
France	1,039.1855	10.26	56
Germany	1,061.4132	10.48	56
Ireland	42.6106	0.42	15
Italy	428.5653	4.23	50
Netherlands	530.8351	5.24	26
Norway	37.8044	0.37	25
Portugal	46.1420	0.46	18
Spain	272.8018	2.69	36
Sweden	272.1960	2.69	34
Switzerland	576.1632	5.69	31
United Kingdom	1,941.4872	19.16	124
Total Europe	6,743.3281	66.55	547
Pacific Region			
Australia	248.7288	2.45	53
New Zealand	15.9981	0.16	10
Hong Kong	236.6594	2.34	33
Japan	2,779.3421	27.43	296
Singapore	107.9337	1.07	28
Total Pacific	3,388.6621	33.45	420
Total EAFE	10,131.9902	100.00	967

Source: Morgan Stanley Capital International

Public Funds with an Internal Program to Manage Non-Domestic Equity

As previously mentioned, CalSTRS retains Barclays Global Investors (BGI), for the management of a passive MSCI EAFE portfolio. Currently, CalSTRS has no internal passive non-domestic equity program.

Table 2 identifies defined benefit corporate and public funds with internally managed non-domestic equity programs. The funds are ranked by size of non-domestic equity assets internally managed. Among CalSTRS' peers there is no consensus on how much to allocate to internal non-domestic equity management. The survey shows that 23 of the top 200 funds (11.5%) have non-domestic equity assets managed internally. Of the 15 largest corporate and public funds with internally managed assets (all asset classes), 53.3% of these funds have an internal non-domestic equity program.

Table 2: Defined Benefit Funds with Non-Domestic Equity Assets Managed Internally ($ millions); Sorted by International Equity Dollars Under Internal Management

Fund	Total	Dom Eqty	Dom Bonds	Int'l Eqty	Int'l Bonds
New Jersey Division of Investment	62,614	29,397	15,281	7,978	3,122
Texas Teacher Retirement System	69,464	36,109	26,178	4,953	0
General Electric Co.	31,700	13,068	9,127	4,077	567
International Business Machines Corp	13,225	8,902	381	3,942	0
E.I. DuPont de Nemours & Co. Inc	16,933	6,455	4,100	3,934	894
Ohio State Teachers Ret Sys	38,334	19,013	10,092	3,340	0
Wisconsin (State of) Investment Board	25,705	9,125	10,386	2,834	985
Michigan (State of) Department of Treasury	38,855	20,965	10,167	1,724	0
Bell Atlantic Master Trust	3,319	1,208	401	1,710	0
California University	31,586	17,479	9,292	1,057	2,836
Prudential Insurance Co. of America	8,210	3,716	2,399	1,024	452
Georgia Teachers Retirement Sys	33,545	17,594	14,822	806	0
Texas Employees Retirement Sys	4,272	3,490	0	777	0
Alabama Retirement Systems	21,627	7,864	9,639	551	211
South Dakota Retirement Sys	3,559	1,631	985	445	0
USX Corp.	10,693	5,291	3,718	439	0
CIGNA Corp.	2,110	837	598	415	0
Citigroup Inc.	3,000	871	1,600	400	129
Georgia Employees' Retirement System	12,557	6,699	5,496	290	0
MetLife	3,652	2,056	980	121	177
Montana Board of Investments	4,486	2,075	2,342	69	0
Eli Lilly & Co.	181	138	13	30	0
GTE Investment Management Corp.	2,060	2,044	3	13	0

Source: Lehman Brothers

Performance

The performance objective of the developed market segment of the passive non-domestic equity portfolio is to closely track the return of the MSCI EAFE Index. Table 3 shows the external passive manager's performance for the periods from 1993 through 1999. The information compares the portfolio's performance with the returns of the index. The average unhedged portfolio return for the past 3 years was 14.530% while the index return was 1.214% higher at 15.744%. These returns incorporate transaction costs but not management fees or securities lending income. The significantly higher tracking error rate is, in part, due to CalSTRS investment portfolio structure decisions.

Table 3: MSCI EAFE

	Unhedged Passive Portfolio	Index	Tracking Error
Total Return			
1993	53.585%	32.561%	21.024%
1994	7.520%	7.778%	-0.258%
1995	12.192%	11.208%	0.984%
1996	5.324%	6.047%	-0.723%
1997	-0.662%	1.778%	-2.440%
1998	17.790%	19.995%	-2.205%
1999	28.391%	26.963%	1.428%
Annualized Return			
2 Year	22.977%	23.430%	-0.453%
3 Year	14.530%	15.744%	-1.214%
4 Year	12.156%	13.240%	-1.084%
5 Year	12.163%	12.830%	-0.667%

Note: The methodology for calculating performance for the MSCI EAFE Index assumes that, each month, $1/12^{th}$ of the annual dividends for the portfolio are reinvested in a slice of the portfolio, giving a "smoothed" dividend yield for the index. In reality, the receipt of dividends is much more "lumpy." Additionally, dividends are received in foreign currency. The conversion of the dividends to USD may occur at different rates than those used to calculate the returns of the index.

Pros for Managing MSCI EAFE Equity Assets Internally

There are several reasons for managing a passive MSCI EAFE indexed portfolio internally.

<u>Potential Cost Savings if Sufficient Asset Size is Internalized</u>

The issue of cost is important to consider when deciding to bring a portion of the MSCI EAFE Index portfolio in-house. The explicit costs of managing passive MSCI EAFE equity component will actually decrease on both an absolute and proportional basis as the size of the internal portfolio increases. This would mainly be due to the reduction of the asset-based external management fee.

Table 4 shows an annual budget for CalSTRS management of a MSCI EAFE indexed portfolio. The expenses include incremental staffing, systems, and other overhead costs associated with in-house passive equity management.

The human resources allocation component of fixed costs includes full-time commitment from three investment professionals. Portfolio management software, systems, and database include several outside services.

Table 4: Direct Costs for CalSTRS' In-House Management

Professional Staff[1]	$250,000
Portfolio Management Software, Systems, and Databases	$150,000
Total	$400,000

[1] Professional staff of at least 3 staff members with experience in portfolio construction and security and foreign exchange trading.

Table 5 shows how proportional costs change from the current cost structure, depending on the amount of assets under internal management. Assuming a $14 billion passive MSCI EAFE component, the total management fee of approximately $4,200,000 (assuming fee of 3 basis points) would begin to decrease if CalSTRS managed a portfolio larger than approximately $1 billion.

Table 5: Economic Analysis of Index Management

	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5
External Managed Assets ($ bn)	14.0	12.0	10.0	8.0	7.0
Internal Managed Assets ($ bn)	0.0	2.0	4.0	6.0	7.0
Costs for Internal Management	$0	$400,000	$400,000	$400,000	$400,000
Costs for External Management	$4,200,000	$3,600,000	$3,000,000	$2,400,000	$2,100,000
Total Cost for Management	$4,200,000	$4,000,000	$3,400,000	$2,800,000	$2,500,000
Cost Savings	$0	$200,000	$800,000	$1,400,000	$1,700,000

Tracking error, which gauges the investment's ability to track a specified index, is the measure of quality in passive equity management. Tracking error is the difference between the realized actual performance of an investment portfolio and the investment performance of its assigned benchmark. Lower tracking error reflects a higher quality of passive management. Trading activities increase tracking error and represent a cost to the portfolio.

If internal management can maintain a level of tracking error equivalent to that produced by CalSTRS' external passive non-domestic equity manager, then any reduction in management costs through internal management improves returns. However, an increase in tracking error can easily offset any incremental reduction in management costs. Therefore, staff must weigh its prospective ability to keep tracking error near that produced by CalSTRS' external passive manager against any projected incremental reductions in management costs.

The effects of lower tracking error can result in significant dollars being added to the total CalSTRS' investment portfolio. For example, a lower tracking error of 0.01% (one basis point) for a $14 billion MSCI EAFE portfolio would add approximately $1.4 million annually to the total portfolio value. If 1 basis point improvement could be achieved, the net benefit could be potential higher after adding the direct costs savings from internal management.

Gain in Knowledge Base

In addition to the potential of providing significant marginal reduction in cost, the tools and resources used to manage an internal portfolio could be used for efficient planning and execution of: (i) non-domestic equity manager transitions, (ii) non-domestic equity manager fundings, and (iii) non-domestic equity manager terminations. In each of these instances, the systems used to manage the internal MSCI EAFE equity program could support staff's planning activities and implementation plans better than the use of external expertise.

Also, having internal capability helps in negotiating and dealing with external managers. The resources provide staff with the ability to possibly enhance the monitoring process of external managers. Specifically, staff would have additional tools to evaluate externally managed portfolio return, risk and trading costs, providing CalSTRS with a clearer perspective on portfolio risk and performance. This improved monitoring increases the staff's awareness and facilitates a more robust dialogue with external active and passive managers.

Build Up of Infrastructure for Additional Index Fund Management

An important aspect of index fund management is that once the needed infrastructure is established the capacity of index fund assets that can be managed is elastic. Hence, for an index fund, managing $1 billion takes similar infrastructure and effort as managing $5 billion.

More Control Over Investment Activities

External management of assets requires increased coordination between CalSTRS and the external manager to ensure policy decisions are carried out in an effective and efficient manner. As a result, there is always a risk that implementing a policy may not completely match the original intent of CalSTRS. Conversely, internal management allows for maximum control over the use and deployment of assets. This control may improve CalSTRS' ability to apply various investment strategies and meet other needs of the investment portfolio. With tighter control comes the potential for improved customization, increased confidentiality, and enhanced integration of investment activities.

Establishing an internal asset management facility provides the option of managing assets internally versus externally. Internal management is likely to result in cost savings, while external management is likely to provide convenience.

In addition, internal management increases the protection of the MSCI EAFE indexed component. In the event that the external manager is terminated, internal management provides an efficient method for CalSTRS to transition from the old manager to the new manager. The external manager's assets could be transferred to the internal manager until a new manager is selected.

Cons for Managing Passive Non-Domestic Equity Assets Internally

Explicit Cost of Data, Risk Model, and Systems

There are various costs that CalSTRS would incur if it chooses to pursue an in-house passive MSCI EAFE management program. Some of these items include costs for MSCI data, risk model, systems, and databases.

Needed Allocation of Human Resources

Passive non-domestic equity management requires a breadth of investment knowledge. Specifically, portfolio construction deserves significant attention. In addition, experience with security and foreign exchange trading is essential. It will be necessary to increase by three staff members with these skills.

Structural Considerations for Managing Passive Non-Domestic Equity Internally

The goal of the internal management program should be to achieve a level of tracking error at least equivalent to the external manager's experience. The risks can be minimized by limiting the initial amount under internal management. A transfer from the external MSCI EAFE indexed portfolio could fund the initial portfolio.

Reviewing certain structural issues provides a picture of what an in-house passive management alternative might look like.

Organization

Under the direction of the Chief Investment Officer and Director of Internal Equities, staff will make investment decisions regarding the structure of the portfolio in accordance with the policies approved by the Board. As previously mentioned, the human resources allocation component of fixed costs includes full-time commitment from at least three investment professionals. These individuals would be fully knowledgeable in the areas of passive portfolio construction, stock and foreign exchange trading, and organization management. Other personnel would provide the necessary support services.

Portfolio Construction

One of the most important decisions in managing an index fund is the construction of the portfolio. The portfolio construction method could have a significant impact on performance. The primary goal of passive portfolio management is eliminating tracking error. Keeping this goal in mind, one can view passive management across two dimensions. The first dimension is the technique used to match the investment portfolio to a specific index. The second dimension is the type of index being matched.

There are two approaches to creating a MSCI EAFE index portfolio: full replication and optimization. The full replication technique seeks to match the index exactly by holding all of the stocks in the index, properly weighted to match each stock's weight in the MSCI EAFE Index. Full replication has virtually no tracking error but results in the highest operations and settlement costs. The optimization technique, on the other hand, seeks to match the risk profile of a certain index through any number of available statistical sampling methods.

Through optimization, one can construct a portfolio that comes very close to matching the risk/return profile of the MSCI EAFE Index. The optimized portfolio has fewer stocks to account for, monitor and settle. This process is intended to keep portfolio construction costs to a minimum. The downside is that sampling will never be full replication. This simple fact leads to a higher potential for tracking error.

Table 6 shows the results (estimated annual tracking error) of a series of optimization simulations for the MSCI EAFE Index. For instance, it can be seen that a 500 stock portfolio (the best 500 stocks, held in the most advantageous proportions) would have a tracking error of 0.14% relative to the index. There is a trade-off between the number of stocks in a basket designed to track the MSCI EAFE Index and the expected annual tracking error. To achieve a tracking error of less than 10 basis points, the portfolio would need to include at least 600 stocks. A sizable increase in the number of stocks in the portfolio will limit portfolio returns variance from the MSCI EAFE Index. However, more stocks in a portfolio leads to higher transaction costs and, as a result, lower performance at the margin.

Table 6: Tracking Error Analysis

# of Stocks	Expected Annual Tracking Error*
100	1.26%
150	0.86%
200	0.64%
250	0.47%
300	0.37%
400	0.22%
500	0.14%
600	0.08%
700	0.03%
800	0.01%
967	0.00%

Source: Goldman Sachs, Merrill Lynch and BARRA

(* Tracking error is the standard deviation of the difference between a portfolio's return and that of the index. A portfolio with a tracking error of 0.50% (50 basis points) is expected to return +/- 0.50% of EAFE return about 66% of the time.)

The basic trade-off in the management of an indexed portfolio is tracking accuracy versus transaction costs. A reasonable balance between these two conflicting objectives must be achieved before deciding on a portfolio construction technique.

Conclusions

There are tradeoffs in undertaking internal approach to managing passive non-domestic equity.

One important event is the issuance of a RFP for passive equity management. The results of this RFP process will help assess the viability of internal management. After the passive EAFE manager(s) are selected, Staff will perform a detailed review and analysis and present a recommendation to the Investment Committee in the Fall 2000.

If the Investment Committee authorizes an internally managed passive non-domestic equity portfolio with the performance benchmark of the MSCI EAFE Index, the internal manager will be required to adhere to written policies developed by Staff and approved by CalSTRS' Board. The portfolio will be monitored with the same precision required of the external manager. The results would be monitored with an objective of improving the risk and performance on total passive non-domestic equity component.